Running JOA 5.5 Under Linux or the macOS Command line

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Caveat

This tutorial was prepared on a Mac. The instructions *should* work in a Linux environment but has not been tested. Please send corrections to the author.

Assumptions

This tutorial assumes Mac users may have only cursory understanding of command line interface (CLI) on your computer. In Mac OS, the command-line interface app is called Terminal. The output in this document is from my Mac's Terminal app. Most terminal output in Linux should look very similar.

Some Basics

Open the Terminal app now. You should be in your home directory. On my machine the CLI prompt looks like:

`Ozs-MacBook-Air:~ oz$`

The tilde stands for the home directory. The bolded part of the text above, the CLI prompt, will change for your specific machine and OS.

If you use the `pwd` command, you'll see the *path* to this directory:

```
Ozs-MacBook-Air:~ oz$ pwd
/Users/oz
```

The `ls` command lists the contents of the current directory:

```
Ozs-MacBook-Air:~ oz$ ls
5.4                   JOA                   coastlines
Applications          JOA_Support           eclipse
Argo_Clim.joa         Library               hello.java
Desktop               Movies                javacli
Development           Music                 lexicon.txt.zip
Documents             New Folder With Items miniconda3
Downloads             Pictures              ndeditsettings.txt
Dropbox               Public                ndeditsettings.txt.zip
Example Data Files    PycharmProjects       nowplaying
HelloWorld.class      Sites                 temp
```

```
HelloWorld.java      WebstormProjects            tmp.nc
Ionna1.joa           bathymetry                  ww_tester.joa
```

The `cd` command changes directories to one in the current path:

```
Ozs-MacBook-Air:~ oz$ cd Applications/
Ozs-MacBook-Air:Applications oz$
```

To make a new directory in the current directory use `mkdir`:

```
Ozs-MacBook-Air:~ oz$ mkdir JOA5.5
```

Step 0: Prerequisites: Installing Java

You must have a version of the VM installed. You may either install the full JDK or the JRE. We recommend the adoptOpenJDK JVM at https://adoptopenjdk.net/ version 11.

To verify that Java is installed, issue the `java -version` command in a terminal window. You should see output similar to this

```
Ozs-MacBook-Air:Java oz$ java -version
java version "1.8.0_60"
Java(TM) SE Runtime Environment (build 1.8.0_60-b27)
Java HotSpot(TM) 64-Bit Server VM (build 25.60-b23, mixed mode)
```

Step 1: Download an Installation of JOA 5.4

Download the zip file for the Mac OS version of JOA 5.5 to your Linux machine from the JOA web site (http://joa.ucsd.edu/joa). Unzip the JOA5.5.zip file in a directory of your choosing by using the `cd` and, optionally, the `mkdir` commands. The unzipped file is a directory called "Java OceanAtlas". The directory should have these contents (type the `ls -l` command to see a longer listing of the files . I have simplified the output a bit):

```
Ozs-MacBook-Air:Java OceanAtlas oz$ ls -l
drwxrwxrwx@   7 oz   staff    238 Oct  2 10:09 Example Data Files
drwxrwxrwx@  95 oz   staff   3230 Oct 21 16:49 JOA_Support
drwxrwxrwx@   3 oz   staff    102 Oct  2 10:09 Java OceanAtlas 5.app
drwxrwxrwx@  90 oz   staff   3060 Oct  2 10:09 bathymetry
drwxrwxrwx@   5 oz   staff    170 Oct  2 10:09 coastlines
-rwxrwxrwx@   1 oz   staff  50600 Jun 20  2007 lexicon.txt
-rwxrwxrwx@   1 oz   staff    435 May 20  2005 ndeditsettings.txt
drwxrwxrwx@   3 oz   staff    102 Oct  2 10:09 temp
```

Notice that Java OceanAtlas 5.app is actually a directory (the initial `d` character in the line). Use the `cd` command to move to that directory:

```
Ozs-MacBook-Air:Java OceanAtlas oz$ cd Java\ OceanAtlas\ 5.app/
Ozs-MacBook-Air:Java OceanAtlas 5.app oz$ ls -l
```

```
drwxrwxrwx@  8 oz   staff  272 Oct  2 10:09 Contents
```

The \ (back slash) allows us to have spaces embedded in a file or directory name.
Now move to the Contents directory:

```
Ozs-MacBook-Air:Java OceanAtlas 5.app oz$ cd Contents/
Ozs-MacBook-Air:Contents oz$ ls -l
-rwxrwxrwx@  1 oz   staff  3730 Oct  2 09:57 Info.plist
drwxrwxrwx@ 33 oz   staff  1122 Nov  5 12:09 Java
drwxrwxrwx@  3 oz   staff   102 Oct  2 10:09 MacOS
-rwxrwxrwx@  1 oz   staff     8 Oct  2 09:57 PkgInfo
drwxrwxrwx@  3 oz   staff   102 Oct  2 10:09 PlugIns
drwxrwxrwx@  4 oz   staff   136 Oct  2 10:09 Resources
```

And finally move to the Java directory:

```
Ozs-MacBook-Air:Contents oz$ cd Java
Ozs-MacBook-Air:Java oz$ ls -l
-rwxrwxrwx@  1 oz   staff     4189 Jul 14  2004 AppleJavaExtensions.jar
-rwxrwxrwx@  1 oz   staff   166656 Sep  8  2005 HTTPClient.jar
-rwxrwxrwx@  1 oz   staff  3820866 Oct  2 08:34 JOA5.jar
-rwxrwxrwx@  1 oz   staff    16512 Nov 19  2002 MRJToolkitStubs.zip
-rwxrwxrwx@  1 oz   staff    50231 Mar 31  2004 OpenForecast-0.4.0.jar
-rwxrwxrwx@  1 oz   staff   109043 Jan 17  2008 commons-io-1.4.jar
-rwxrwxrwx@  1 oz   staff    28931 Jun 25  2015 epic.key
-rwxrwxrwx@  1 oz   staff   354600 Dec  9  2007 eps2.jar
-rwxrwxrwx@  1 oz   staff   206234 Oct  8  2012 jackson-core-2.1.0.jar
-rwxrwxrwx@  1 oz   staff   253045 Aug 16  2007 javaproj-1.0.4.jar
-rwxrwxrwx@  1 oz   staff   278388 Mar 15  2004 jcommon-0.9.1.jar
-rwxrwxrwx@  1 oz   staff   584535 Mar 15  2004 jfreechart-0.9.16.jar
-rwxrwxrwx@  1 oz   staff    76889 May 21  2012 json-rpc-1.0.jar
-rwxrwxrwx@  1 oz   staff   121070 Jan 23  2003 junit-3.8.1.jar
-rwxrwxrwx@  1 oz   staff    50600 Jun 20  2007 lexicon.txt
-rwxrwxrwx@  1 oz   staff   611236 Dec  9  2007 ndedit2.jar
-rwxrwxrwx@  1 oz   staff   557964 Jun 24  2004 netcdf21Dods.jar
-rwxrwxrwx@  1 oz   staff  1693218 Sep 23  2011 noaa_pmel.jar
-rwxrwxrwx@  1 oz   staff    14146 Apr 14  2011 opencsv-2.3.jar
-rwxrwxrwx@  1 oz   staff   397035 Aug  4  2007 pmel-library.jar
-rwxrwxrwx@  1 oz   staff    25105 Sep 22  2003 png.jar
-rwxrwxrwx@  1 oz   staff   400700 Jan  6  2005 quaqua.jar
-rwxrwxrwx@  1 oz   staff   481325 Oct  3  2003 xml4j_1_1_16.jar
```

This directory is where you will run Java OceanAtlas from.

Step 2: Copy (cp) support files/support directory from the Java OceanAtlas application directory to the Java directory:

```
Ozs-MacBook-Air:Java oz$ mkdir JOA_Support
Ozs-MacBook-Air:Java oz$ cp -R ../../../JOA_Support/ ./JOA_Support
Ozs-MacBook-Air:Java oz$ cp ../../../ndeditsettings.txt .
```

(This command looks up 3 directories to find the support files and copies them to a file of the same name in the current directory—the trailing period in the command. —R is used to copy a directory and its contents.)

Step 3: Make a Directory called 'temp':

```
Ozs—MacBook—Air:Java oz$ mkdir temp
```

Step #4: Verify folder contents:

```
Ozs—MacBook—Air:Java oz$ ls —lrt
—rwxrwxrwx@  1 oz   staff     16512 Nov 19  2002 MRJToolkitStubs.zip
—rwxrwxrwx@  1 oz   staff    121070 Jan 23  2003 junit—3.8.1.jar
—rwxrwxrwx@  1 oz   staff     25105 Sep 22  2003 png.jar
—rwxrwxrwx@  1 oz   staff    481325 Oct  3  2003 xml4j_1_1_16.jar
—rwxrwxrwx@  1 oz   staff    584535 Mar 15  2004 jfreechart—0.9.16.jar
—rwxrwxrwx@  1 oz   staff    278388 Mar 15  2004 jcommon—0.9.1.jar
—rwxrwxrwx@  1 oz   staff     50231 Mar 31  2004 OpenForecast—0.4.0.jar
—rwxrwxrwx@  1 oz   staff    557964 Jun 24  2004 netcdf21Dods.jar
—rwxrwxrwx@  1 oz   staff      4189 Jul 14  2004 AppleJavaExtensions.jar
—rwxrwxrwx@  1 oz   staff    400700 Jan  6  2005 quaqua.jar
—rwxrwxrwx@  1 oz   staff    166656 Sep  8  2005 HTTPClient.jar
—rwxrwxrwx@  1 oz   staff    397035 Aug  4  2007 pmel—library.jar
—rwxrwxrwx@  1 oz   staff    253045 Aug 16  2007 javaproj—1.0.4.jar
—rwxrwxrwx@  1 oz   staff    611236 Dec  9  2007 ndedit2.jar
—rwxrwxrwx@  1 oz   staff    354600 Dec  9  2007 eps2.jar
—rwxrwxrwx@  1 oz   staff    109043 Jan 17  2008 commons—io—1.4.jar
—rwxrwxrwx@  1 oz   staff     14146 Apr 14  2011 opencsv—2.3.jar
—rwxrwxrwx@  1 oz   staff   1693218 Sep 23  2011 noaa_pmel.jar
—rwxrwxrwx@  1 oz   staff     76889 May 21  2012 json—rpc—1.0.jar
—rwxrwxrwx@  1 oz   staff    206234 Oct  8  2012 jackson—core—2.1.0.jar
—rwxrwxrwx@  1 oz   staff   3820866 Oct  2 08:34 JOA5.jar
drwxrwxrwx@ 96 oz   staff      3264 Nov  5 12:09 JOA_Support
—rwxrwxrwx@  1 oz   staff     50600 Nov  5 13:00 lexicon.txt
—rwxr—xr—x@  1 oz   staff     46660 Nov  5 13:00 joa_epic.key
—rwxrwxrwx@  1 oz   staff     28931 Nov  5 13:00 epic.key
—rwxr—xr—x@  1 oz   staff       435 Nov  5 13:16 ndeditsettings.txt
drwxr—xr—x   2 oz   staff        68 Nov  5 13:20 temp
```

(—lrt lists the files in the long form in reverse chronological order so the new files are at bottom of list)
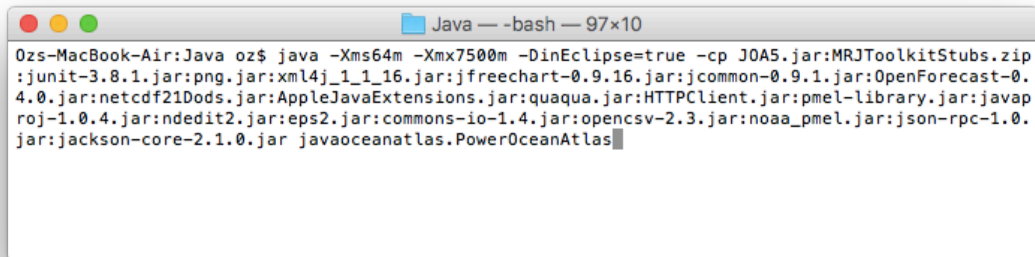
Step #5: Launch the JOA Application from terminal:

Copy the following command into terminal and press return. It doesn't look like it in this word processor but it is one line of text.

```
java —Xms64m —Xmx7500m —DinEclipse=true —cp
JOA5.jar:MRJToolkitStubs.zip:junit—
3.8.1.jar:png.jar:xml4j_1_1_16.jar:jfreechart—0.9.16.jar:jcommon—
```
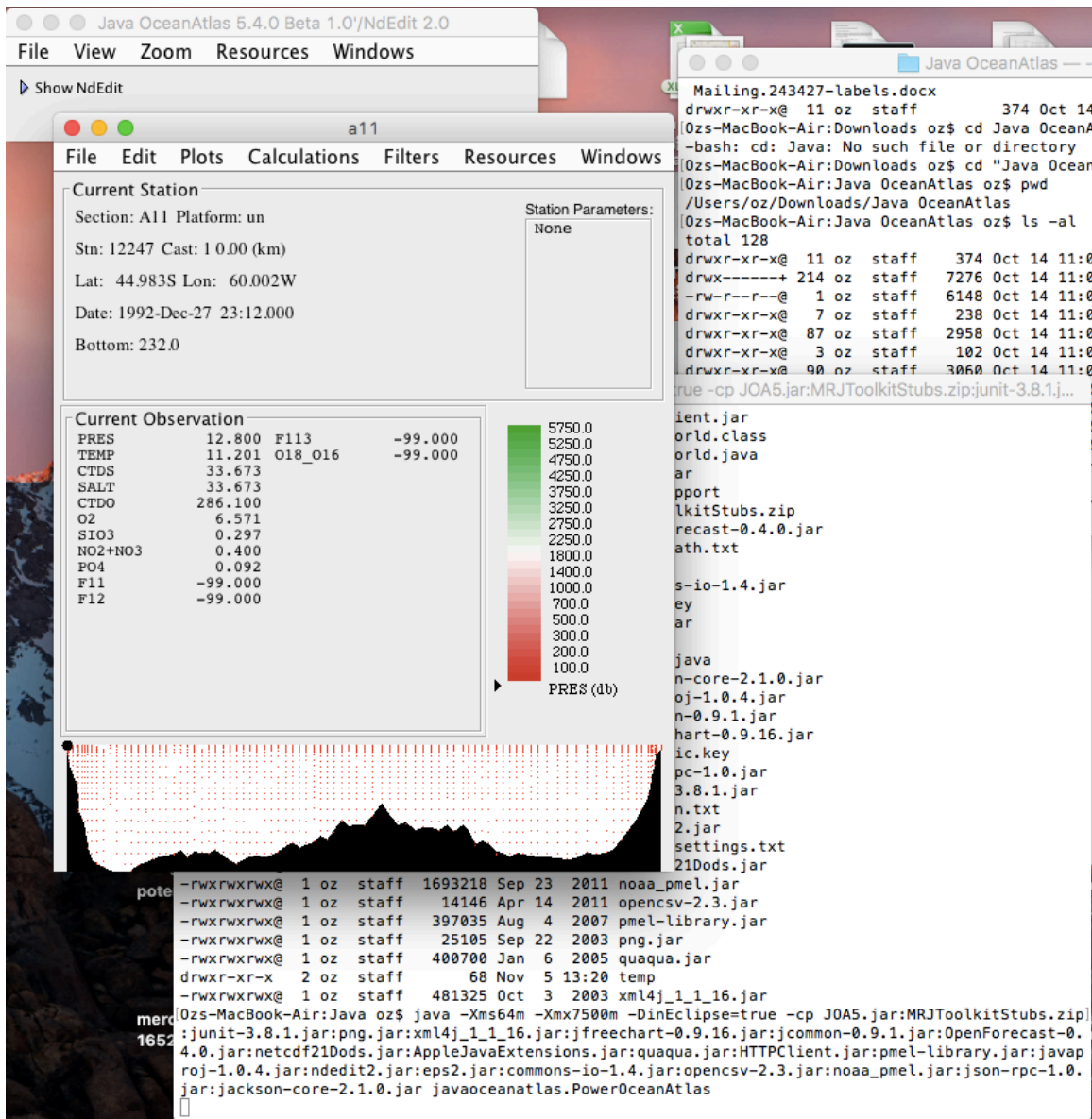
```
0.9.1.jar:OpenForecast-
0.4.0.jar:netcdf21Dods.jar:AppleJavaExtensions.jar:quaqua.jar:HTTPClien
t.jar:pmel-library.jar:javaproj-1.0.4.jar:ndedit2.jar:eps2.jar:commons-
io-1.4.jar:opencsv-2.3.jar:noaa_pmel.jar:json-rpc-1.0.jar:jackson-core-
2.1.0.jar javaoceanatlas.PowerOceanAtlas
```

It should look like this in the terminal:

Java OceanAtlas 5.5 should launch:

Simplifying the Installation

You can copy the modified Java directory anywhere and this should still work. Just remember that JOA must be launched from a terminal window that points to where all its code and support files are located. This series of commands copies JOA from the original location to a new folder:

Not shown: a series of cd commands to move to your desired destination directory.

Optionally make a new directory:
```
Ozs-MacBook-Air:~ oz$ mkdir JOA
```

Move to this directory:
```
Ozs-MacBook-Air:~ oz$ cd JOA
```

Copy the original directory to this new directory:
```
Ozs-MacBook-Air:JOA oz$ cp -R "/Users/oz/Desktop/Java
OceanAtlas/Java OceanAtlas 5.app/Contents/Java" .
```

Your directory path will certainly look different than this.

Launch JOA from this new location:

```
Ozs-MacBook-Air:JOA oz$ java -Xms64m -Xmx7500m -DinEclipse=true -
cp JOA5.jar:MRJToolkitStubs.zip:junit-
3.8.1.jar:png.jar:xml4j_1_1_16.jar:jfreechart-0.9.16.jar:jcommon-
0.9.1.jar:OpenForecast-
0.4.0.jar:netcdf21Dods.jar:AppleJavaExtensions.jar:quaqua.jar:HTT
PClient.jar:pmel-library.jar:javaproj-
1.0.4.jar:ndedit2.jar:eps2.jar:commons-io-1.4.jar:opencsv-
2.3.jar:noaa_pmel.jar:json-rpc-1.0.jar:jackson-core-2.1.0.jar
javaoceanatlas.PowerOceanAtlas
```